

CLAIM AMENDMENTS

1. (Currently Amended) A semiconductor device comprising:
a first insulating film on a silicon substrate; and
a second insulating film on said first insulating film_s, wherein
said first insulating film is a silicon oxide film having a ~~film~~ thickness of not exceeding 1 nm-or-less and a suboxide content of not exceeding 30%-or-less; and
said second insulating film is a high dielectric constant insulating film.
2. (Currently Amended) The semiconductor device according to claim 1, wherein
said high dielectric constant insulating film is selected from the group consisting of a metal oxide film ~~or~~ and a metal silicate film.
3. (Currently Amended) The semiconductor device according to claim 2, wherein
said metal oxide film is an oxide film ~~of~~ including at least one metal selected from ~~a~~ the
group consisting of hafnium, zirconium, lanthanum, and yttrium.
4. (Currently Amended) The semiconductor device according to claim 2, wherein
said metal silicate film is a silicate film ~~of~~ including at least one metal selected from ~~a~~ the
group consisting of hafnium, zirconium, lanthanum, yttrium, and aluminum.
5. (Original) The semiconductor device according to claim 4, wherein said metal
silicate film contains nitrogen.
6. (Currently Amended) A semiconductor device comprising:
a first insulating film on a silicon substrate; and
a second insulating film on said first insulating film_s, wherein
said first insulating film is a silicon oxynitride film having a ~~film~~ thickness of not exceeding 1 nm-or-less and a suboxide content of not exceeding 30%-or-less; and
said second insulating film is a high dielectric constant insulating film.
7. (Currently Amended) The semiconductor device according to claim 6, wherein
said high dielectric constant insulating film is selected from the group consisting of a metal oxide film ~~or~~ and a metal silicate film.

8. (Currently Amended) The semiconductor device according to claim 7, wherein said metal oxide film is an oxide film ~~of~~ including at least one metal selected from ~~a~~ the group consisting of hafnium, zirconium, lanthanum, and yttrium.

9. (Currently Amended) The semiconductor device according to claim 7, wherein said metal silicate film is a silicate film ~~of~~ including at least one metal selected from ~~a~~ the group consisting of hafnium, zirconium, lanthanum, yttrium, and aluminum.

10. (Original) The semiconductor device according to claim 9, wherein said metal silicate film contains nitrogen.

11. (Currently Amended) A semiconductor device comprising:
a first insulating film on a silicon substrate; and
a second insulating film on said first insulating film, wherein
said first insulating film is a silicon nitride film having a ~~film~~ thickness ~~of~~ not exceeding 1 nm or less and an oxygen content ~~of less than~~ not exceeding 0.1 atom%; and
said second insulating film is a high dielectric constant insulating film.

12. (Currently Amended) A method for manufacturing a semiconductor device, comprising ~~the steps of~~:
treating a surface of a silicon substrate with a non-oxidizing gas under ~~reduced~~ sub-atmospheric pressure;
forming a first insulating film on said silicon substrate while maintaining ~~said reduced~~ the sub-atmospheric pressure;
forming a metal oxide film on said first insulating film using an oxygen-containing material, said metal oxide film being a second insulating film; and
heat treating said metal oxide film ~~under in an atmosphere~~ ambient of an oxidizing gas.

13. (Currently Amended) A method for manufacturing a semiconductor device, comprising ~~the steps of~~:
treating a surface of a silicon substrate with a non-oxidizing gas under ~~reduced~~ sub-atmospheric pressure;
forming a first insulating film on said silicon substrate while maintaining ~~said reduced~~ the sub-atmospheric pressure;

forming a metal silicate film on said first insulating film using an oxygen-containing material, said metal silicate film being a second insulating film; and
heat treating said metal silicate film ~~under in an atmosphere~~ ambient of an oxidizing gas.

14. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, further comprising ~~a step of, after said heat treatment, performing a treatment for~~ treating, increasing ~~a~~ nitrogen concentration of a surface of said second insulating film.

15. (Currently Amended) The method for manufacturing a semiconductor device according to claim 14, ~~wherein said treatment for~~ including increasing said nitrogen concentration ~~is a~~ by heat treatment ~~under in an atmosphere~~ ambient of ammonia gas.

16. (Currently Amended) The method for manufacturing a semiconductor device according to claim 14, ~~wherein said treatment for~~ including increasing said nitrogen concentration ~~is a~~ by plasma treatment ~~using in~~ nitrogen ~~gas~~.

17. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, wherein said first insulating film is a film selected from ~~a the~~ the group consisting of ~~a silicon oxide film, a silicon oxynitride film, and a silicon nitride film~~.

18. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, ~~wherein said step of~~ including treating said surface of said silicon substrate with said non-oxidizing gas ~~is performed~~ at a temperature between 25 °C and 600 °C, ~~and, wherein~~ wherein said non-oxidizing gas is a fluorine-containing gas.

19. (Currently Amended) The method as claimed in claim 13, wherein ~~a~~ partial pressure of said non-oxidizing gas ~~is~~ does not exceed 100 Pa ~~or less~~.

20. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, wherein:

said non-oxidizing gas is a fluorine-containing gas; and

said fluorine-containing gas is at least one selected from ~~a the~~ the group consisting of HF, ClF₃, F₂, and NF₃.

21. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, wherein said oxidizing gas is oxygen-gas.

22. (Currently Amended) The method for manufacturing a semiconductor device according to claim 21, wherein ~~said~~ the oxygen-gas contains one of ozone ~~or~~ and oxygen radicals.

23. (Currently Amended) The method for manufacturing a semiconductor device according to claim 13, ~~wherein said~~ including heat-treatment is performed treating at a temperature between 100 °C and 400 °C.